

REMARKS

Claims 12-26 are pending and remain for consideration. Claims 12-15 and 20-26 are amended herein.

Claims 12-26 are rejected under 35 U.S.C. §102(b) as allegedly being anticipated by Popovic et al. (U.S. Pat. No. 4,829,352). The rejection is traversed and reconsideration is respectfully requested.

The present Response incorporates by reference the arguments for patentability raised in the previous Response to Office Action dated April 25, 2007.

In view of the misunderstandings raised in the Office Action, claim 12 is being amended herein to merely clarify and define the Hall element as having four contacts. The four contacts are configured for supply and discharge of the current and for tapping the Hall voltage. Claim 12 is being further amended to merely clarify that the resistor is an additional resistor. Corresponding amendments have been made to claims 24 to 26. The amendments to claims 20 to 23 are of formal nature only – the cancelled feature is a mere repetition.

In the Response to Arguments section of the Office Action dated July 12, 2007, the Examiner believes that Popovic at column 7, lines 3-29 teaches that the resistors are connected by contacts. Applicants respectfully disagree with the Examiner's assessment of Popovic.

In column 7, lines 3-29, Popovic does not mention any contacts. Therefore it cannot be maintained that Popovic teaches that the resistors are connected by contacts (8, 9, 10, 11). This section refers to Fig. 9a. This figure shows a bridge circuit made up of four resistors and represents the equivalent circuit diagram of a conventional Hall element.

At paragraph [0011] of the specification of the present application, it is mentioned that *"From the electrical point of view, such a Hall element with four contacts can be regarded as a resistance bridge formed by four resistors R_1 to R_4 of the Hall element."* Fig. 9a of Popovic is a mere graphical representation of this. These four resistors are

not individual resistors that could be removed from the Hall element. Physically they do not exist as single entities. The “resistor R_1 ”, the “resistor R_2 ”, “resistor R_3 ” and “resistor R_4 ” are always the same n-well of the Hall element, but as seen as a current flowing through the assigned contacts of the respective “resistor”. Figs. 1 and 3 of the present application also show this resistance bridge with the four “resistors” R_1 to R_4 . Figs. 4 and 5 of the present application also show that an additional resistor, namely R_5 or twice $\frac{1}{2} R_5$, is added that changes the electrical properties of the Hall element. It is this additional resistor that is recited in claim 12. Popovic does not disclose such a resistor.

In the Response to Arguments section of the Office Action dated July 12, 2007, the Examiner also believes that “Popovic teaches that the two inner contacts 9 and 10 and the two outer contacts 8 and 11 read on the structure of claims 12 and 24.” The Examiner argues that the contacts are arranged on the straight line and on the surface of the substrate as shown in Figure 6 of Popovic. Applicants respectfully disagree with the Examiner’s assessment of Popovic.

Popovic discloses in Fig. 6 several contacts arranged along a straight line and arranged on the surface of the substrate. However, Fig. 6 does not disclose the structure as recited in claim 12. A person skilled in the art knows that the Hall element has two contacts configured for supplying a current to the Hall element and two voltage contacts configured for measuring the Hall voltage. With Popovic the two contacts 9 and 10 and the two contacts 8 and 11 are not configured to work like that; they are all current contacts. None of them is a voltage contact, and they are not configured for the supply and discharge of a current to the Hall element, but rather are used to make a current coming from the buried N^+ contact (a1, b1, c1, d1) and flowing through the left N-well 2 to the right N-well 3. The current then flows through the right N-well 3 to the other buried N^+ contact (a3, b3, c3, d3).

Applicants respectfully disagree with the Examiner’s selection from Popovic of the outer contacts for use in the claim rejections. The contacts 8 and 11 are not the

outer contacts, but rather the contacts 7 and 12. Also the contacts 7 and 12 are current contacts. Claim 12 includes the limitation that “the contacts are arranged on a surface of a well of a first conductivity type”. With Popovic the “two inner contacts 9 and 10” and the “two outer contacts 8 and 11” are not arranged on a surface of a well, but are arranged above two different wells 2 and 3 that are electrically isolated from each other.

For at least the reasons set forth above it cannot be maintained that Popovic discloses a Hall element having four contacts arranged along a straight line and a resistor connected to the outer contacts as is recited in claim 12. Having shown that the Hall element of Popovic and the Hall element of the present invention as recited in claim 12 are structurally different, it cannot be maintained that Popovic anticipates claim 12, and therefore the rejection of claim 12 under 35 U.S.C. § 102(b) should be withdrawn and claim 12 allowed.

Claims 13-23 each depend directly or indirectly from claim 12 and therefore incorporate the limitations of claim 12. Accordingly, these dependent claims are allowable for at least the same reasons set forth for claim 12.

Independent claims 24-26 all recite that the Hall elements have two inner and two outer contacts arranged along a straight line. The Hall element of Popovic does not have its four Hall contacts arranged along a straight line, but has two contacts arranged at the surface and two contacts buried at a certain distance below the surface of the semiconductor material. Moreover, Popovic does not disclose placing all four Hall contacts in the same well and at the surface of the semiconductor material as is recited in claims 24-26. For at least these reasons it cannot be maintained that Popovic anticipates claims 24-26, and therefore the rejection of claims 24-26 under 35 U.S.C. § 102(b) should be withdrawn and claims 24-26 allowed.

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In view of the foregoing, it is respectfully submitted that claims 12-26 are in condition for allowance. All issues raised by the Examiner having been addressed, an early action to that effect is earnestly solicited.

No fees or deficiencies in fees are believed to be owed. However, authorization is hereby given to charge our Deposit Account No. 13-0235 in the event any such fees are owed.

Respectfully submitted,

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